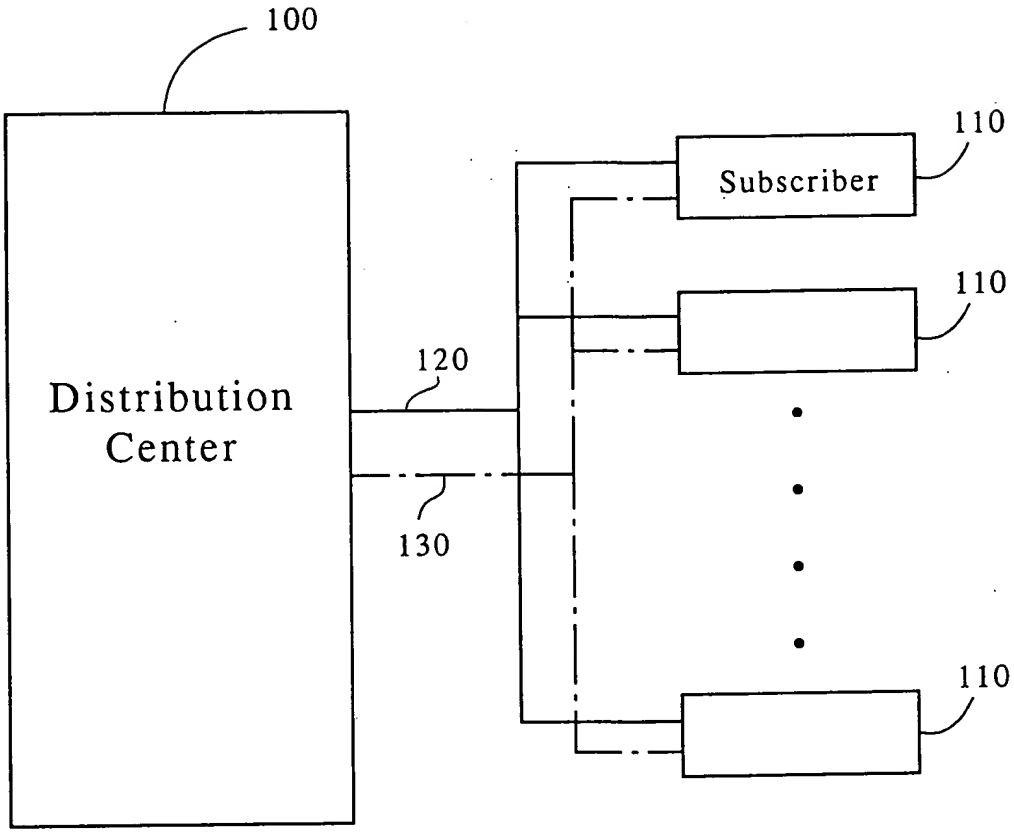


FIG. 1

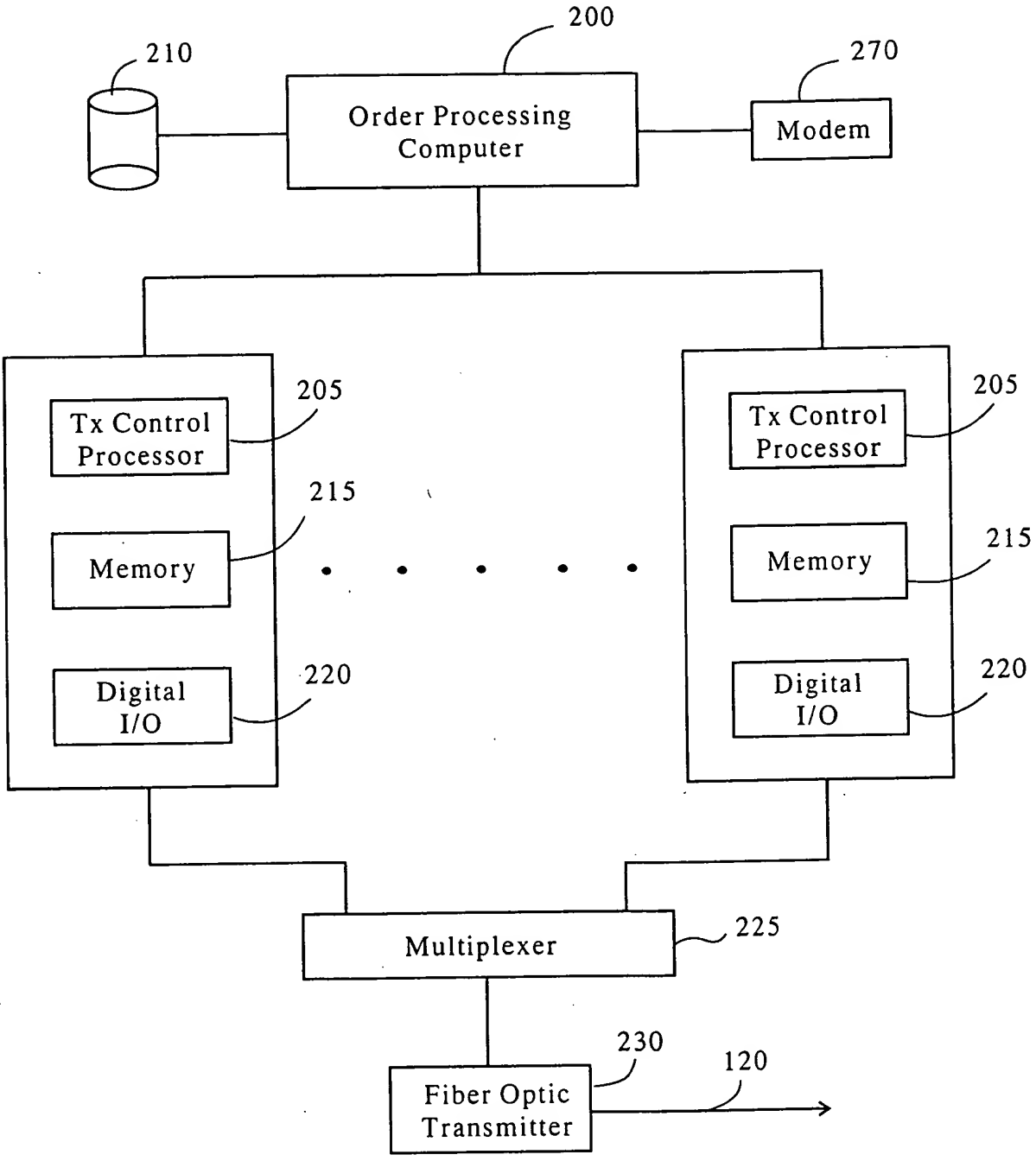

200
210
270
Order Processing Computer
Modem
205
Tx Control Processor
215
Memory
220
Digital I/O
205
Tx Control Processor
215
Memory
220
Digital I/O
225
Multiplexer
230
120
Fiber Optic Transmitter

FIG. 2

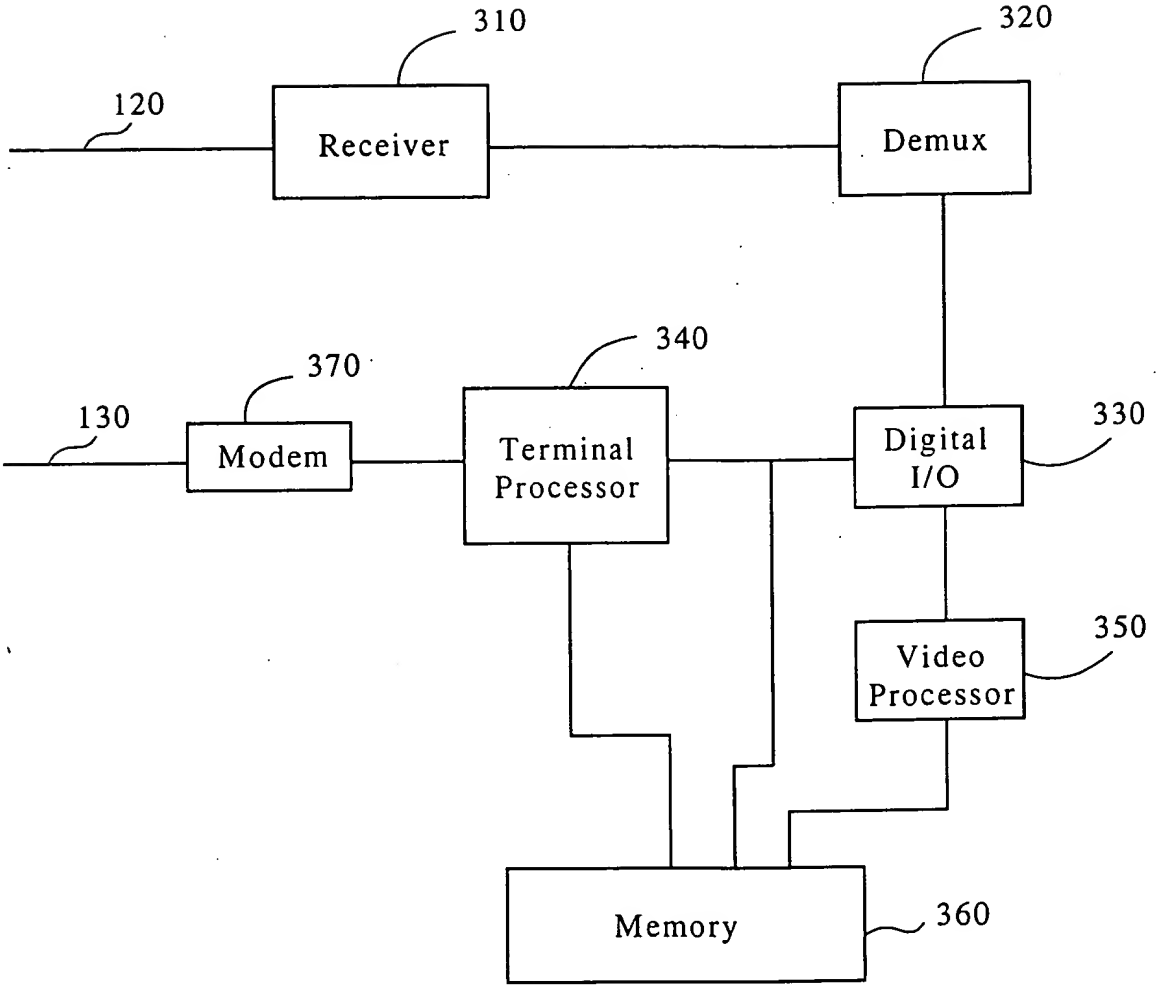

310
320
120
Receiver
Demux
340
370
130
Modem
Terminal Processor
Digital I/O
330
350
Video Processor
Memory
360

FIG. 3

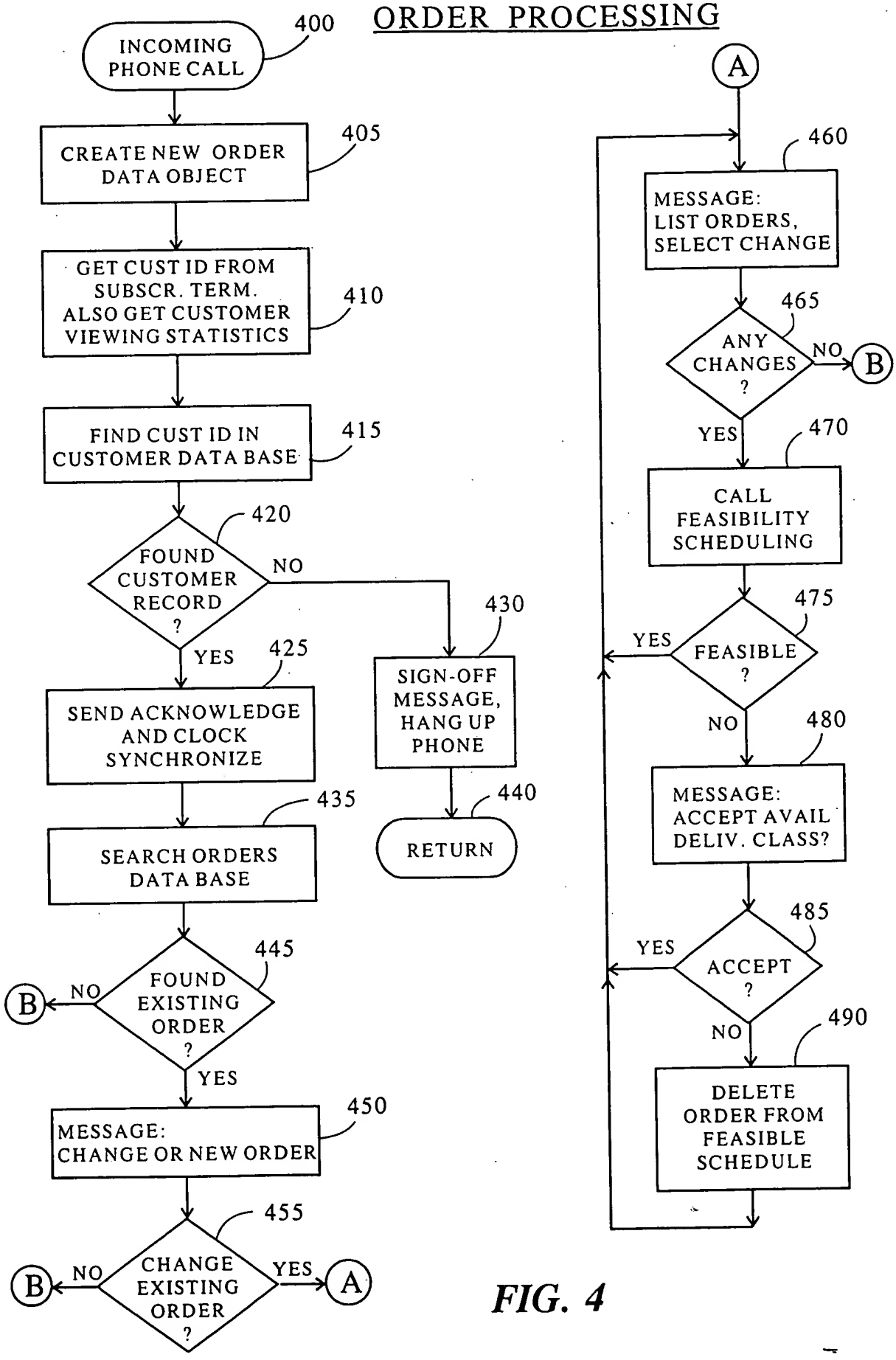

ORDER PROCESSING
400
INCOMING PHONE CALL
405
CREATE NEW ORDER DATA OBJECT
410
GET CUST ID FROM SUBSCR. TERM. ALSO GET CUSTOMER VIEWING STATISTICS
415
FIND CUST ID IN CUSTOMER DATA BASE
420
FOUND CUSTOMER RECORD ?
NO
YES
425
SEND ACKNOWLEDGE AND CLOCK SYNCHRONIZE
430
SIGN-OFF MESSAGE, HANG UP PHONE
440
RETURN
435
SEARCH ORDERS DATA BASE
445
FOUND EXISTING ORDER ?
B
NO
YES
450
MESSAGE: CHANGE OR NEW ORDER
455
CHANGE EXISTING ORDER ?
B
NO
YES
A
A
460
MESSAGE: LIST ORDERS, SELECT CHANGE
465
ANY CHANGES ?
NO
B
YES
470
CALL FEASIBILITY SCHEDULING
475
FEASIBLE ?
YES
NO
480
MESSAGE: ACCEPT AVAIL DELIV. CLASS?
485
ACCEPT ?
YES
NO
490
DELETE ORDER FROM FEASIBLE SCHEDULE

FIG. 4

ORDER PROCESSING (CONT.)

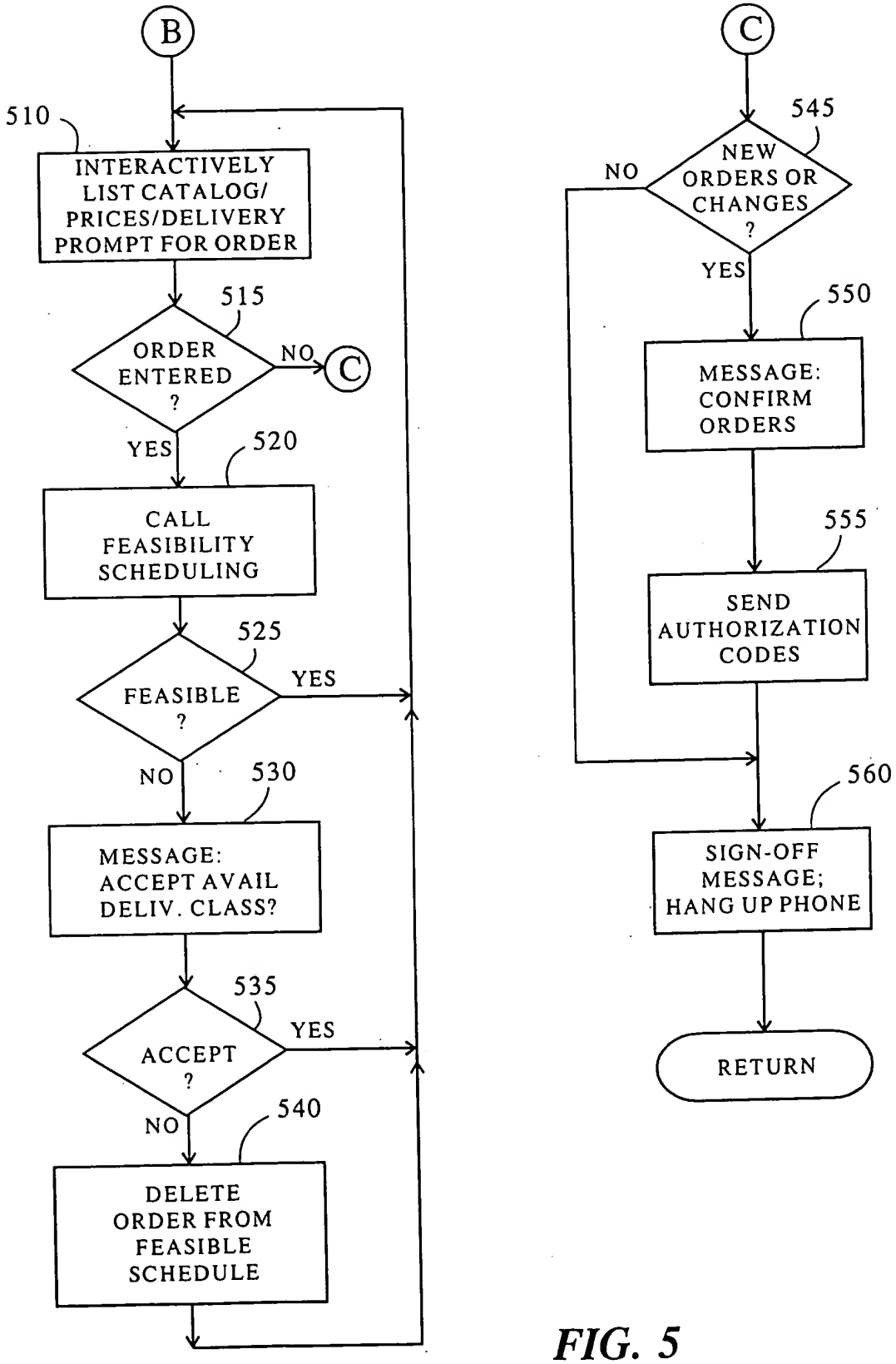


FIG. 5

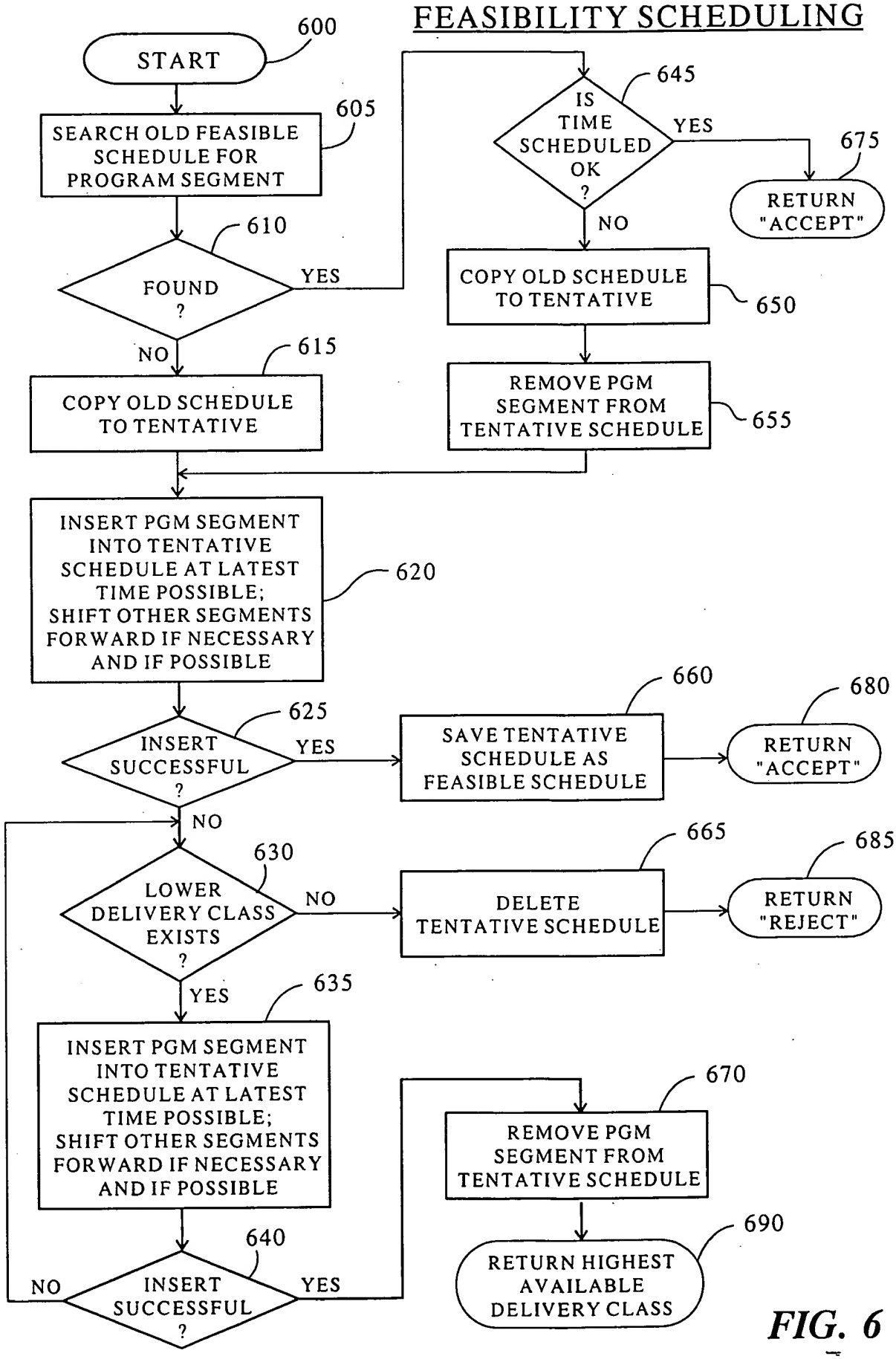

FEASIBILITY SCHEDULING
START
600
SEARCH OLD FEASIBLE SCHEDULE FOR PROGRAM SEGMENT
605
FOUND ?
610
YES
NO
COPY OLD SCHEDULE TO TENTATIVE
615
INSERT PGM SEGMENT INTO TENTATIVE SCHEDULE AT LATEST TIME POSSIBLE; SHIFT OTHER SEGMENTS FORWARD IF NECESSARY AND IF POSSIBLE
620
INSERT SUCCESSFUL ?
625
YES
NO
SAVE TENTATIVE SCHEDULE AS FEASIBLE SCHEDULE
660
RETURN "ACCEPT"
680
LOWER DELIVERY CLASS EXISTS ?
630
NO
YES
DELETE TENTATIVE SCHEDULE
665
RETURN "REJECT"
685
INSERT PGM SEGMENT INTO TENTATIVE SCHEDULE AT LATEST TIME POSSIBLE; SHIFT OTHER SEGMENTS FORWARD IF NECESSARY AND IF POSSIBLE
635
INSERT SUCCESSFUL ?
640
NO
YES
IS TIME SCHEDULED OK ?
645
YES
NO
RETURN "ACCEPT"
675
COPY OLD SCHEDULE TO TENTATIVE
650
REMOVE PGM SEGMENT FROM TENTATIVE SCHEDULE
655
REMOVE PGM SEGMENT FROM TENTATIVE SCHEDULE
670
RETURN HIGHEST AVAILABLE DELIVERY CLASS
690

FIG. 6

FEASIBILITY SCHEDULING (CONT.)

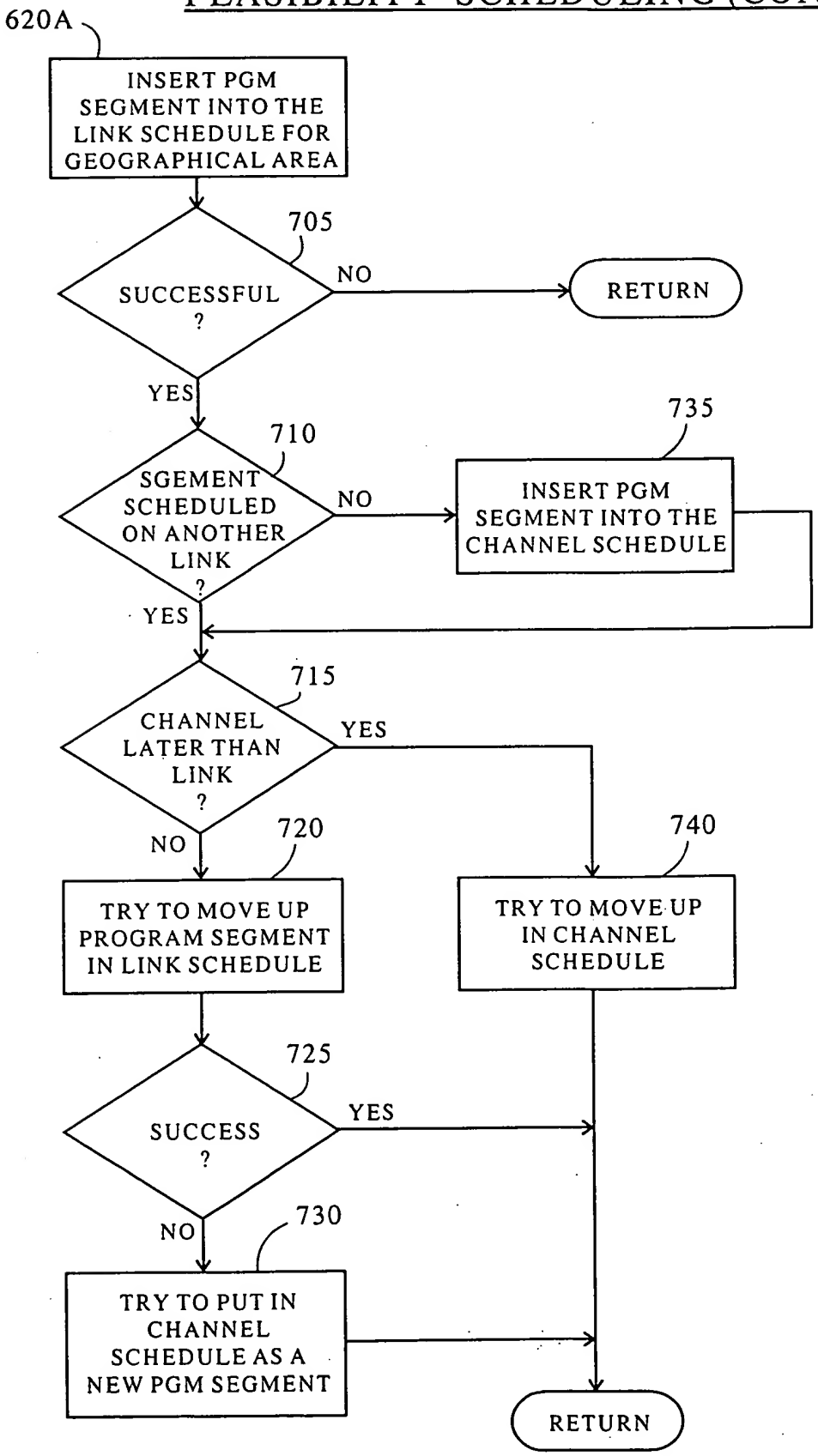


FIG. 7

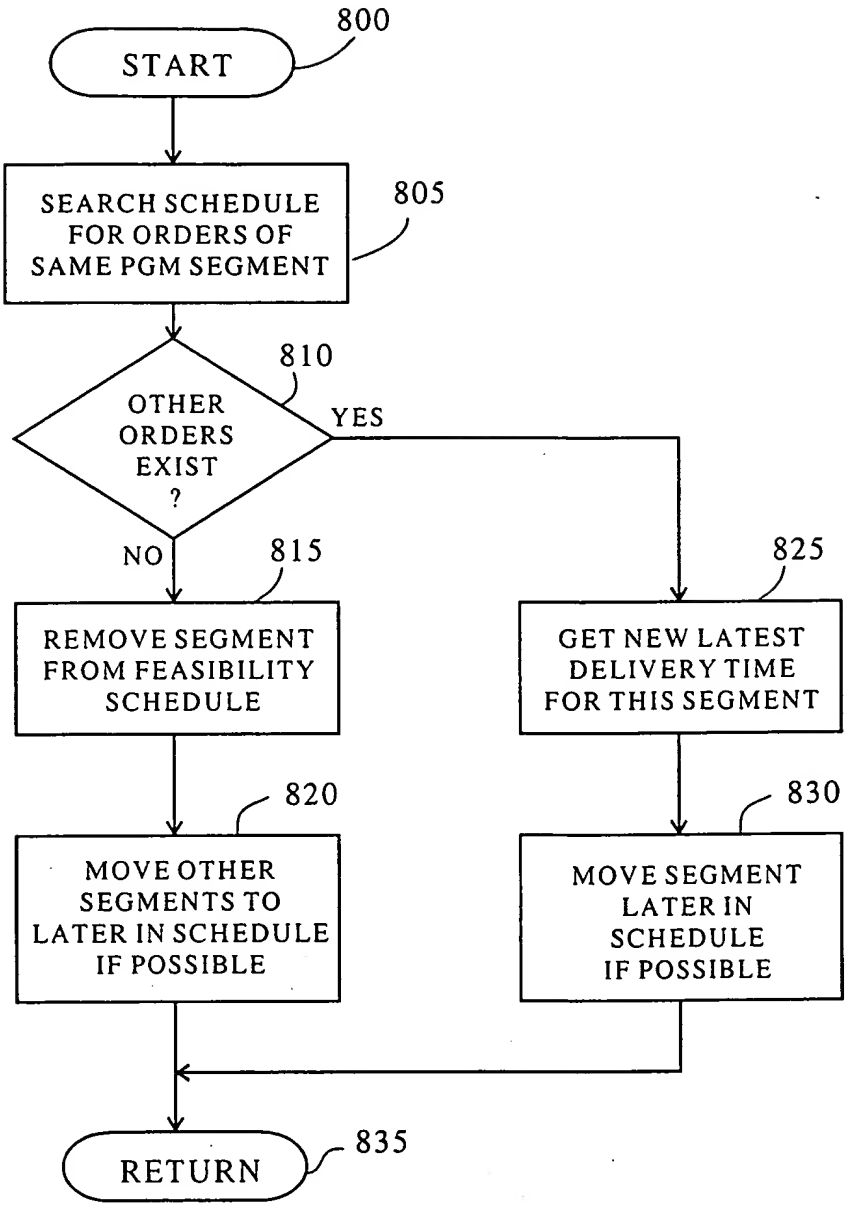

800
START
SEARCH SCHEDULE FOR ORDERS OF SAME PGM SEGMENT
805
810
OTHER ORDERS EXIST ?
YES
NO
815
825
REMOVE SEGMENT FROM FEASIBILITY SCHEDULE
GET NEW LATEST DELIVERY TIME FOR THIS SEGMENT
820
830
MOVE OTHER SEGMENTS TO LATER IN SCHEDULE IF POSSIBLE
MOVE SEGMENT LATER IN SCHEDULE IF POSSIBLE
RETURN
835

FIG. 8

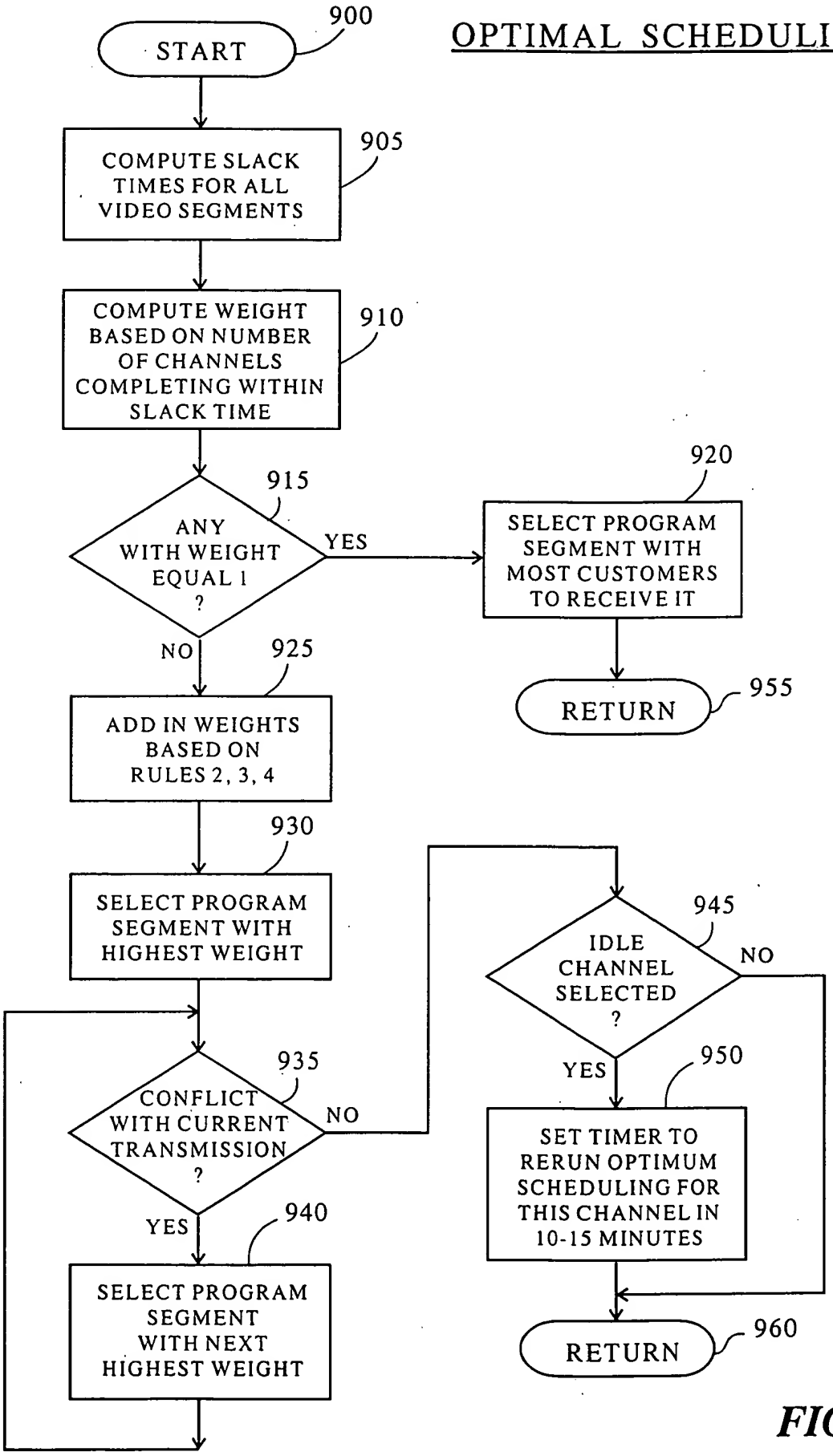

OPTIMAL SCHEDULING
900
START
905
COMPUTE SLACK TIMES FOR ALL VIDEO SEGMENTS
910
COMPUTE WEIGHT BASED ON NUMBER OF CHANNELS COMPLETING WITHIN SLACK TIME
915
ANY WITH WEIGHT EQUAL 1 ?
YES
920
SELECT PROGRAM SEGMENT WITH MOST CUSTOMERS TO RECEIVE IT
RETURN
955
NO
925
ADD IN WEIGHTS BASED ON RULES 2, 3, 4
930
SELECT PROGRAM SEGMENT WITH HIGHEST WEIGHT
935
CONFLICT WITH CURRENT TRANSMISSION ?
NO
YES
940
SELECT PROGRAM SEGMENT WITH NEXT HIGHEST WEIGHT
945
IDLE CHANNEL SELECTED ?
NO
YES
950
SET TIMER TO RERUN OPTIMUM SCHEDULING FOR THIS CHANNEL IN 10-15 MINUTES
RETURN
960

FIG. 9

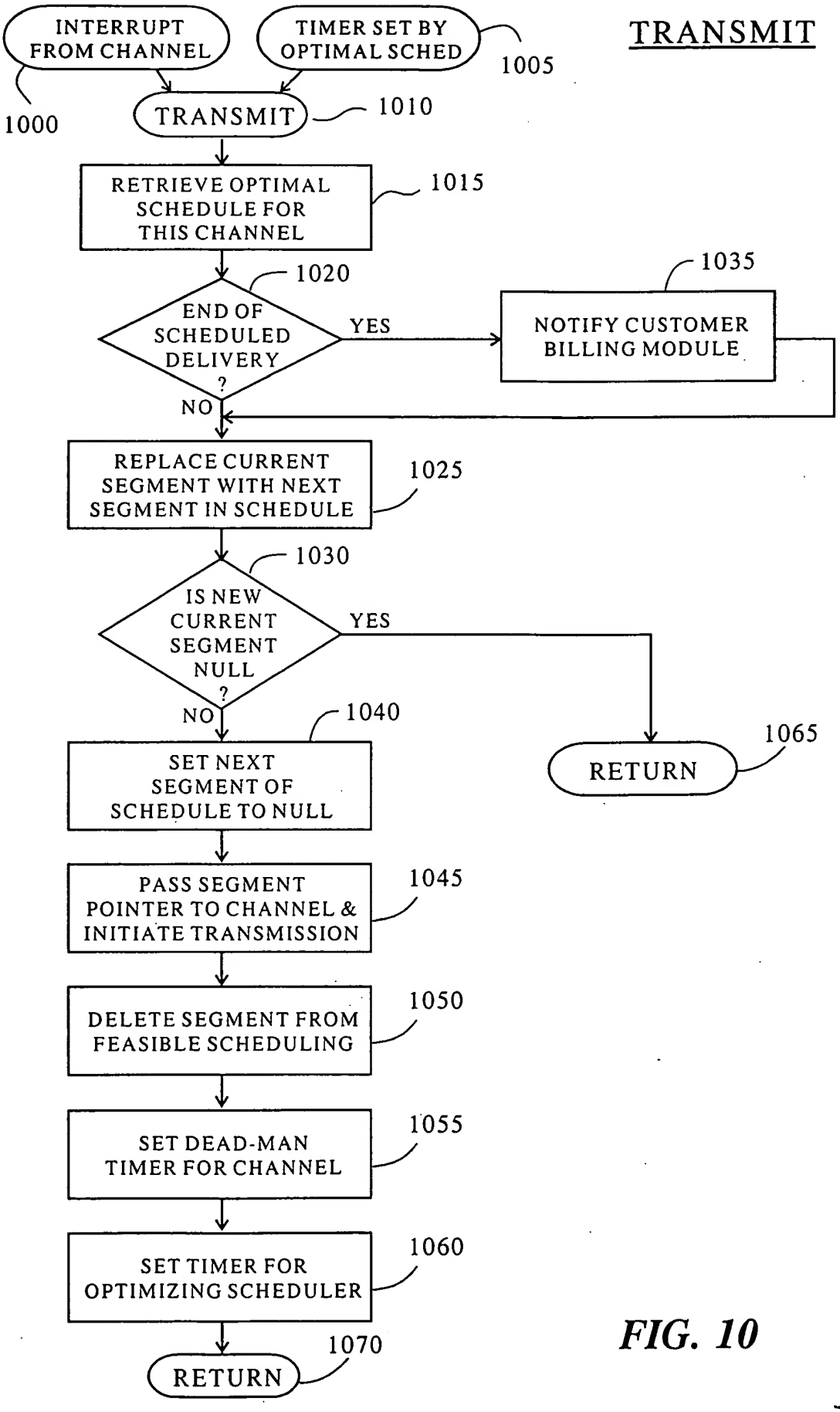
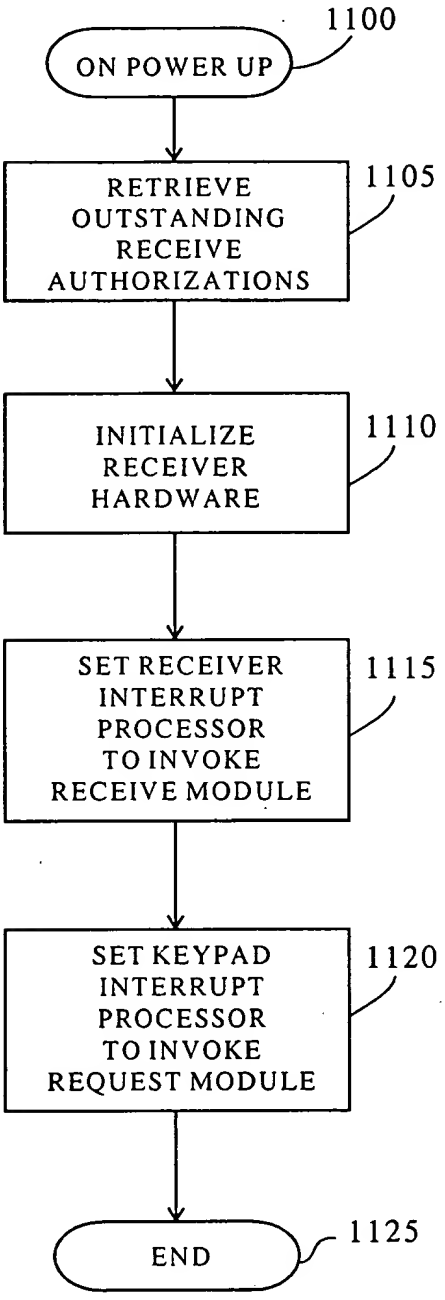

TRANSMIT
INTERRUPT FROM CHANNEL
TIMER SET BY OPTIMAL SCHED
1005
1000
TRANSMIT
1010
RETRIEVE OPTIMAL SCHEDULE FOR THIS CHANNEL
1015
1020
END OF SCHEDULED DELIVERY ?
YES
1035
NOTIFY CUSTOMER BILLING MODULE
NO
REPLACE CURRENT SEGMENT WITH NEXT SEGMENT IN SCHEDULE
1025
1030
IS NEW CURRENT SEGMENT NULL ?
YES
NO
1040
SET NEXT SEGMENT OF SCHEDULE TO NULL
1065
RETURN
PASS SEGMENT POINTER TO CHANNEL & INITIATE TRANSMISSION
1045
DELETE SEGMENT FROM FEASIBLE SCHEDULING
1050
SET DEAD-MAN TIMER FOR CHANNEL
1055
SET TIMER FOR OPTIMIZING SCHEDULER
1060
1070
RETURN

FIG. 10

START UP MODULE



RECEIVE MODULE

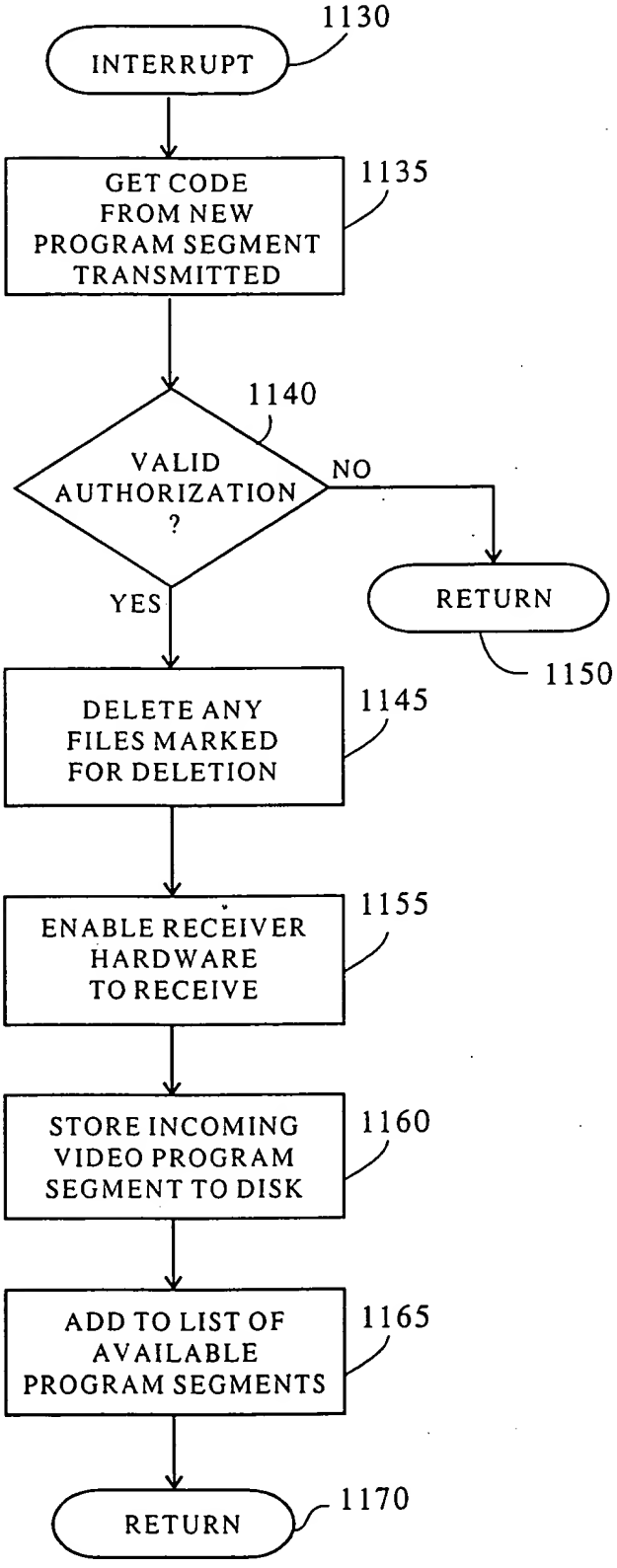


FIG. 11

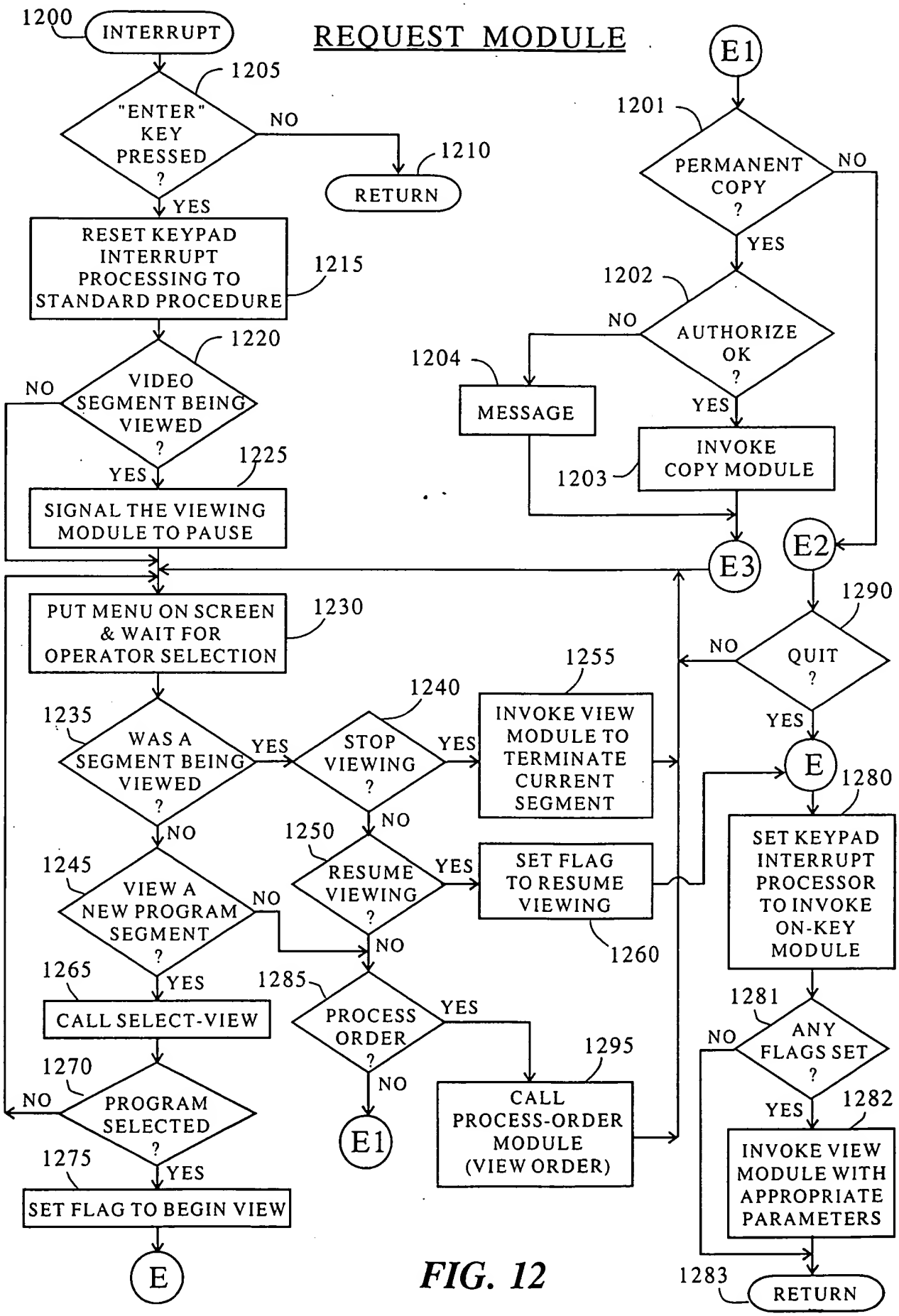

REQUEST MODULE
1200
INTERRUPT
1205
"ENTER" KEY PRESSED ?
NO
1210
RETURN
YES
RESET KEYPAD INTERRUPT PROCESSING TO STANDARD PROCEDURE
1215
1220
VIDEO SEGMENT BEING VIEWED ?
NO
YES
1225
SIGNAL THE VIEWING MODULE TO PAUSE
PUT MENU ON SCREEN & WAIT FOR OPERATOR SELECTION
1230
1235
WAS A SEGMENT BEING VIEWED ?
YES
1240
STOP VIEWING ?
YES
1255
INVOKE VIEW MODULE TO TERMINATE CURRENT SEGMENT
NO
1250
RESUME VIEWING ?
YES
SET FLAG TO RESUME VIEWING
1260
NO
1245
VIEW A NEW PROGRAM SEGMENT ?
NO
YES
1265
CALL SELECT-VIEW
1270
PROGRAM SELECTED ?
NO
YES
1275
SET FLAG TO BEGIN VIEW
E
1285
PROCESS ORDER ?
YES
NO
E1
1295
CALL PROCESS-ORDER MODULE (VIEW ORDER)
E1
1201
PERMANENT COPY ?
NO
YES
1202
AUTHORIZE OK ?
NO
1204
MESSAGE
YES
INVOKE COPY MODULE
1203
E3
E2
1290
QUIT ?
NO
YES
E
1280
SET KEYPAD INTERRUPT PROCESSOR TO INVOKE ON-KEY MODULE
1281
ANY FLAGS SET ?
NO
YES
1282
INVOKE VIEW MODULE WITH APPROPRIATE PARAMETERS
1283
RETURN

FIG. 12

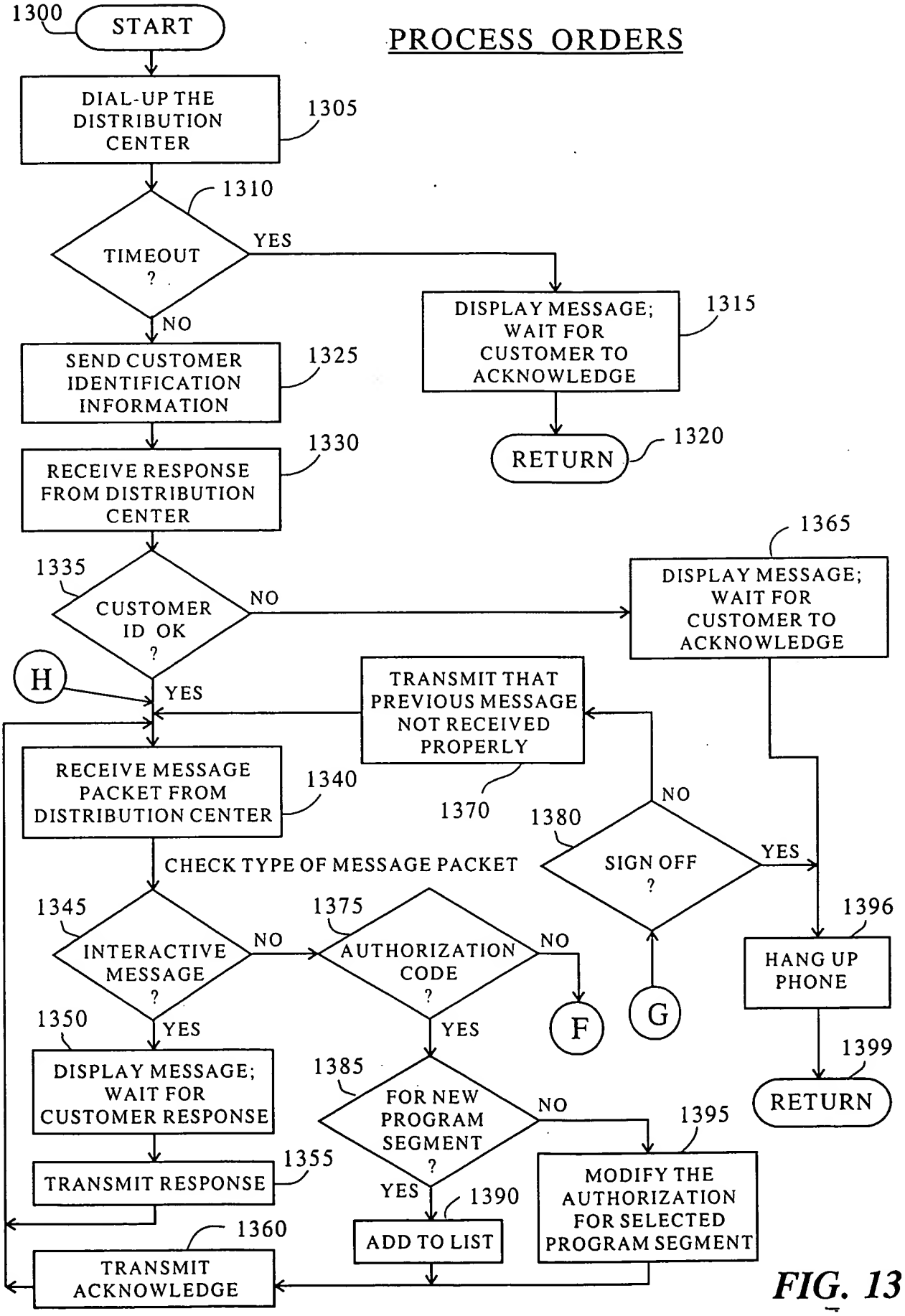

PROCESS ORDERS
1300
START
DIAL-UP THE DISTRIBUTION CENTER
1305
1310
TIMEOUT ?
YES
NO
DISPLAY MESSAGE; WAIT FOR CUSTOMER TO ACKNOWLEDGE
1315
RETURN
1320
SEND CUSTOMER IDENTIFICATION INFORMATION
1325
RECEIVE RESPONSE FROM DISTRIBUTION CENTER
1330
1335
CUSTOMER ID OK ?
NO
1365
DISPLAY MESSAGE; WAIT FOR CUSTOMER TO ACKNOWLEDGE
H
YES
TRANSMIT THAT PREVIOUS MESSAGE NOT RECEIVED PROPERLY
1370
RECEIVE MESSAGE PACKET FROM DISTRIBUTION CENTER
1340
CHECK TYPE OF MESSAGE PACKET
1380
SIGN OFF ?
NO
YES
1396
HANG UP PHONE
1345
INTERACTIVE MESSAGE ?
NO
1375
AUTHORIZATION CODE ?
NO
F
G
1350
YES
YES
1399
RETURN
DISPLAY MESSAGE; WAIT FOR CUSTOMER RESPONSE
1385
FOR NEW PROGRAM SEGMENT ?
NO
1395
MODIFY THE AUTHORIZATION FOR SELECTED PROGRAM SEGMENT
TRANSMIT RESPONSE
1355
YES
1390
ADD TO LIST
1360
TRANSMIT ACKNOWLEDGE

FIG. 13

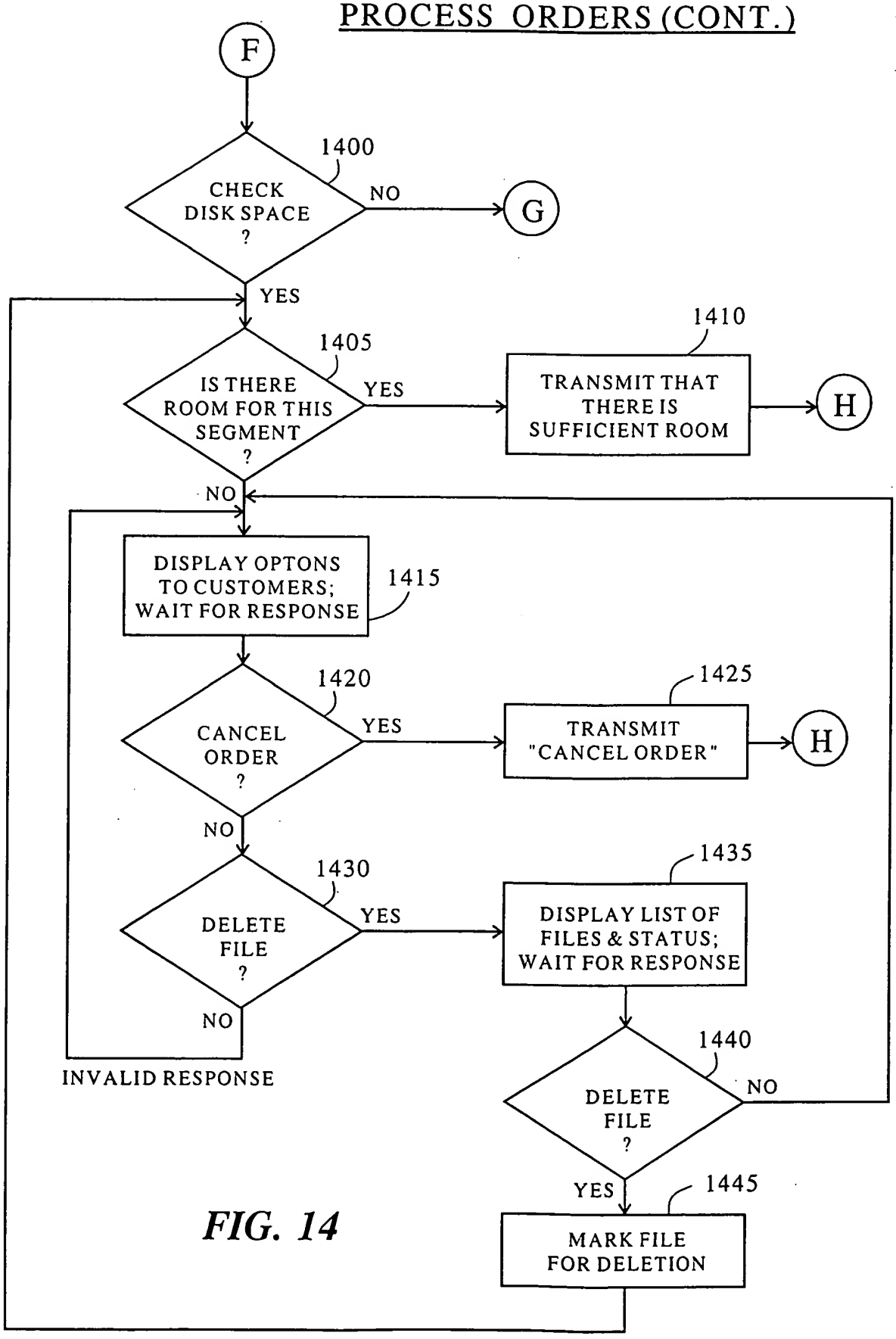

PROCESS ORDERS (CONT.)
F
1400
CHECK DISK SPACE ?
NO
G
YES
1410
1405
IS THERE ROOM FOR THIS SEGMENT ?
YES
TRANSMIT THAT THERE IS SUFFICIENT ROOM
H
NO
DISPLAY OPTONS TO CUSTOMERS; WAIT FOR RESPONSE
1415
1420
1425
CANCEL ORDER ?
YES
TRANSMIT "CANCEL ORDER"
H
NO
1430
1435
DELETE FILE ?
YES
DISPLAY LIST OF FILES & STATUS; WAIT FOR RESPONSE
NO
INVALID RESPONSE
1440
DELETE FILE ?
NO
YES
1445
MARK FILE FOR DELETION

FIG. 14

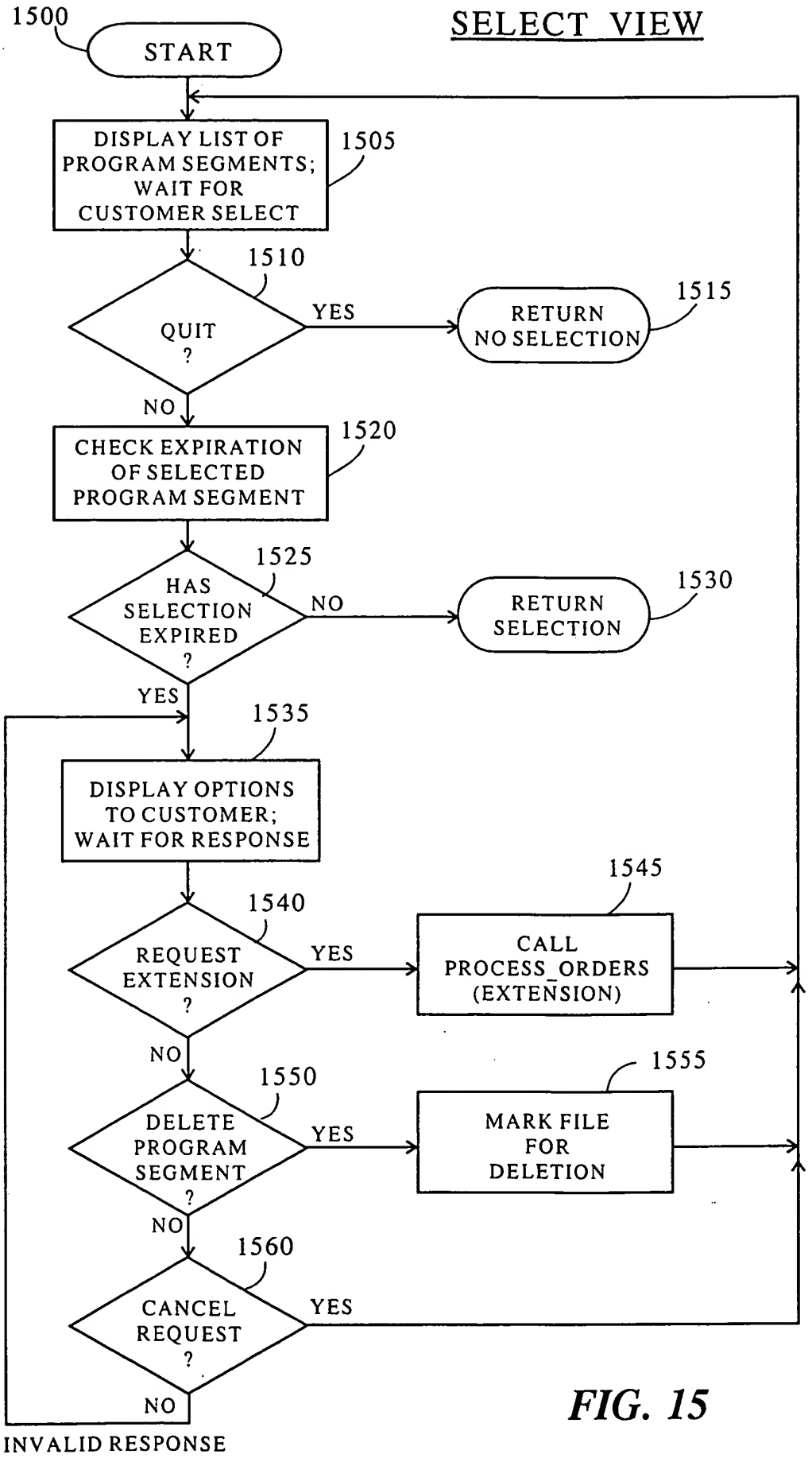

SELECT VIEW
1500
START
DISPLAY LIST OF PROGRAM SEGMENTS; WAIT FOR CUSTOMER SELECT
1505
1510
QUIT ?
YES
1515
RETURN NO SELECTION
NO
CHECK EXPIRATION OF SELECTED PROGRAM SEGMENT
1520
1525
HAS SELECTION EXPIRED ?
NO
1530
RETURN SELECTION
YES
1535
DISPLAY OPTIONS TO CUSTOMER; WAIT FOR RESPONSE
1540
REQUEST EXTENSION ?
YES
1545
CALL PROCESS_ORDERS (EXTENSION)
NO
1550
DELETE PROGRAM SEGMENT ?
YES
1555
MARK FILE FOR DELETION
NO
1560
CANCEL REQUEST ?
YES
NO
INVALID RESPONSE

FIG. 15

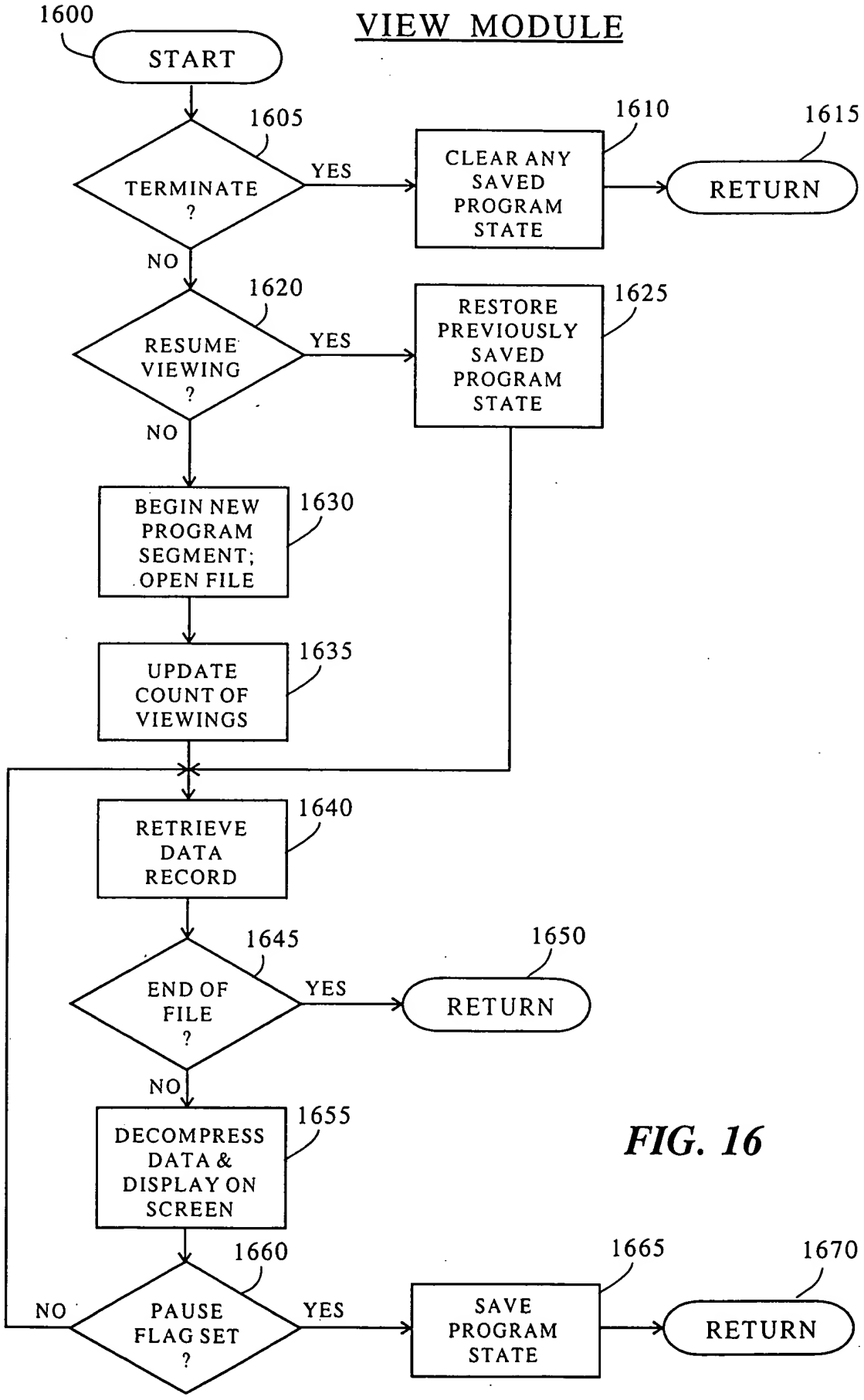

VIEW MODULE
1600
START
1605
TERMINATE ?
YES
1610
CLEAR ANY SAVED PROGRAM STATE
1615
RETURN
NO
1620
RESUME VIEWING ?
YES
1625
RESTORE PREVIOUSLY SAVED PROGRAM STATE
NO
1630
BEGIN NEW PROGRAM SEGMENT; OPEN FILE
1635
UPDATE COUNT OF VIEWINGS
1640
RETRIEVE DATA RECORD
1645
END OF FILE ?
YES
1650
RETURN
NO
1655
DECOMPRESS DATA & DISPLAY ON SCREEN
1660
PAUSE FLAG SET ?
NO
YES
1665
SAVE PROGRAM STATE
1670
RETURN

FIG. 16